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ORIGINAL ARTICLES

REGIONAL AND BLOCK ANESTHESIA*

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On reviewing the literature published on regional anesthesia, one is greatly impressed with the advancement made in this line, since Koller accidentally discovered anesthesia could be produced by cocain being instilled in the eye. Working itself up from the reduced oculist field, regional anesthesia has conquered step by step to its present position as one of the methods of choice in general surgery.

Let us consider, first, the history of regional anesthesia succinctly. It is generally conceded that it had its beginning in 1884 when Koller produced anesthesia in the eye by using a 2 per cent solution of cocain in the conjunctival sack. This produced quite a sensation at this time and as a result several men began to experiment with the anesthetic properties of cocain in other branches of surgery. Their results were disastrous, due to their lack of proper study of the pharmaceutical properties of the drug.

Reclus and Schleich endeavored to overcome the past failures by reducing the strength of the drug, but their anesthesia was of little value. They endeavored to improve their results by adding adrenalin to the solution. This aided some by increasing the grade of anesthesia and lessening its toxicity by slowing up absorption, but even then it was not free from dangers.

The scientific world then began a search for a drug which could be used as a regional anesthetic for all practical purposes and be free from irritation and toxicity. Many drugs were proposed, but all failed to give the desired result.

It was not until 1905 when Einhorn brought forth novocain or procain which was proven to be nonirritating to tissues and seven times less toxic than cocain, and also could be sterilized by a limited amount of boiling. Here again it was found that the adding of adrenelin solution, 1:1000, would intensify its action both as to anesthetic properties and duration of anesthesia, as well as lessen its absorption by contracting the smaller vessels in the infiltrated area, thereby producing a more bloodless field in which to work. Up to the present day we have found no drug which is superior to novocain for local and regional anesthesia.

General anesthesia by the intraspinal method was first used by Le Filliatre, who made his injection as low as the fifth lumbar vertebra with the idea that the pressure would cause it to flow up toward the brain, thereby giving him general anesthesia.

The caudal or sacral block was first produced by Cathelin in 1901, but it was not perfected until Laewen in 1910 popularized it. Still later Davis used this method in 1913, but he varied his technique somewhat by making his approach by the postsacral foramina.

The manner in which regional anesthesia was first produced in general surgery was by intradermal infiltration that caused a large amount of edema, swelling and distortion of anatomy. To overcome this a regional method was brought forth where there was an extensive infiltration of the line of incision, this was followed by further injections from time to time as the operation proceeded.

Following this method, Hockenbruch, and still later Braim, practiced a technique of circuminjection of the operative field whereby it was completely isolated from the rest of the body.

It was not until 1911, by Laewen, that the first true nerve blocking was done. He injected the spinal nerves as they made their exit from the intervertebral foramina. This he called paravertebral anesthesia, and so it is still known.

The types of regional and block anesthesia as practiced today are four in number, namely:

1. Field block, which consists of blocking the nerve terminals around or away from the operative field.

2. Paravertebral or Dorsal block, this consists of blocking the nerves at any point from the skull or spine foramina to the areas they supply.

3. Extradural or Sacral block, consists of

*Read before the Fifty-first Annual Meeting of the Florida Medical Association, held at Orlando, May 13, 14, 1924.

blocking the nerve roots within the spine but outside of the duramater.

4. Intradural or Spinal, consists of blocking the nerve roots within the duramater.

The combination of two or more of these methods make it possible to perform, painlessly, practically all major surgical procedures.

The surgeon who wishes to give regional anesthesia should have a thorough knowledge of anatomy. He must be able to visualize at all times the deep structures that lay beneath the skin and their relationship to external landmarks which he must take with extreme care and accuracy, for it is on these that the success or failure of this method depends. His sense of touch must be one that will enable him to tell the different structures his needlepoint passes through at the same time he visualizes them in their relationship to their surrounding tissues.

His operative technique he will have almost entirely to change; speed will have to be sacrificed for gentleness and ease of manipulation of tissues. For the same reason the length of his incisions must be increased. His dissections must be clean and made with the knife when possible, thus getting away from blunt dissections, tearing apart and the useless handling of tissues, as it is from this that much of our so-called referred pain comes. He must be calm, patient and content regardless of the small irritating incidents that may, or may not, come up during a major surgical procedure, for the patient's psychology varies in direct ratio to that of the operator, and for the technique to be a success he must have the cooperation of the patient.

Let us now direct our attention to patients who are about to have this type of anesthesia. It has been found that this method is least popular in localities where it is new, as they have to be educated up to it. In others, where it has been in practice, they even expect it or ask for it. However, it is not the choice of the patient but the choice of the surgeon, as he is the one to decide the type of operation to be performed. The patient should be told the advantages of the method, wherein it surpasses the inhalation narcosis, etc. He should know when the anesthesia begins and what kind of sensations he might expect. For example, he should be told that when the anesthesia sets in that he might expect a numbness and a sensation of weight in the part that has been anesthetized. He should know that he might have sensations of slight pulls and pressure from time to time as the operation progresses, but that this will not be a pain.

The nurses in a hospital which is using this type of anesthesia must aid in its perfection by being taught how to educate the patients on which it is to be used, and also those who are not to use this technique. For it is primarily on education of the public on which the popularity of the method depends. The nurse should be able to make it clear to them what they might expect on going to the operating room, as it is too late to enlighten them after they arrive there and the patients are in no state of mind to appreciate what is told them. Then again, the nurse should know how to direct the patient's mind while the operation is in progress. Some require to be talked to, while others of a different temperament want to be left alone.

As a general rule, the patient should not be told when the operation begins; and such questions, as to how does he feel or is there any pain, are absolutely barred. If there is any pain, he will let you know; and besides, his facial expression is quite a good guide. It might be well to encourage him from time to time, but never tell him that you will be through in a moment or that there is just a little more, when you are in the midst of a lengthy procedure, for he will be quick to notice the deception and he will lose his confidence in all the other things you may have told him. It can be easily seen that the handling of a patient while he is on the operating table is a task of delicacy and precision. Here is where many successful anesthetists completely fail, and the method unjustly gets the blame. The state of mind of the patient before he goes to the operating table should be one of a drowsy, tranquil feeling, and to bring about this condition we advise the previous injection of morphine sulphate gr. 1/6 and scopolomine gr. 1/300. The morphine produces a specific central analgesic action, a depressant effect on the respiratory and associated medulary centers, a descending depressant action on the entire central nervous system and a constipating effect resulting from a combination of central and local actions. Scopolomine resembles atropine in its influence on the nerve endings, but differs from it in having a sedative effect instead of a stimulating effect on the brain. The above dosage will give us the condition we want without producing the so-called "twilight sleep" which we do not want. Smaller doses than this have more of a tendency to irritate than quiet our patient.

Patients as a whole can be divided into three general classes. Their individual idiosyncrasies are well marked and depend on many things, all of which recognize the emotional element as their chief cause. One class will have a nervous excitement of so great a magnitude that it will prohibit even the simplest steps in a surgical procedure. Others, while they feel no pain, just the consciousness that the operation is in progress will be sufficient for the lightest touch to be interpreted by the brain as pain, and it is to this type that a few whiffs of gas or ether ought to be given to blunt his consciousness and calm him so that the operator may proceed undisturbed. Still others agree readily to regional anesthesia, or even ask for it, but as soon as they reach the operating room either beg to be given inhalation narcosis or faint.

It might be well at this time to express Dr. Crile's opinion on local anesthetics versus inhalation narcosis. "Local anesthetics protect the brain from local operative injury but they do not protect the brain against destructive psychic strain. Inhalation anesthetics exclude the psychic stimulation from the brain cells but do not exclude the operative stimulation."

TECHNIQUE OF REGIONAL ANESTHESIA

The proper technique of regional anesthesia requires a special type of syringe and special needles. I, personally, prefer the Labat regional outfit which consists of a special 10 c.c. syringe with an eccentric tip and bayonet lock, a 2 c.c. Luer all-glass syringe, a set of fine needles of different dimensions; to this should be added three graduate glass measures and two glass cups; a spare syringe and set of needles should always be at hand. The care taken of the needles and syringe is very important, the needles especially require attention, so that they will always be smooth and sharp, for nothing is more displeasing than to attempt to introduce a needle with a hooked or bent point, and then when such a needle is introduced it tears the tissues on its withdrawal, thereby leaving a puncture which will be more or less sensitive after all the others have become normal.

The anesthetic of choice is neocain, without suparin, coming in powder form in sterile containers, the solution being made at the time of injection with sterile normal salt. The adrenalin is added last, using 20 mins. to 100 c.c. regardless of the percentage of the other drug. The neocain solution varies in strength from 0.5 per cent to 2.0 per cent, depending entirely on the locality and surgical procedure which is to be performed. There must be an accurate account of the amount of solution which is injected in a patient because, while the neocain is to all practical purposes free from toxicity, it is still possible to cause alarming symptoms in some instances with an over-amount of the drug. The danger lies mostly with beginners, for they, in their zeal to produce a perfect anesthesia, have a tendency to use too much of the anesthetic solution. In my opinion a fresh solution is at all times preferable to a stock solution. There are a few atmospheric changes that take place and these may, or may not, cause trouble. All stained or colored solutions should be discarded.

There is no pre- or post-operative treatment for one who is to take regional anesthesia. He is allowed to have a light breakfast on the morning of his operation and is given a cup of black coffee as soon as he reaches his room and his normal diet kept up, that is providing, of course, that it does not conflict with the surgical procedure he has undergone.

In general surgery the lack of experience of the surgeon and anesthetist is most likely to reduce the value of regional anesthesia. The nature of the operation, the difficulties encountered in the carrying out of it in certain procedures, the greater demands for major operations imposed on the method, the necessity for the use of refined surgical technique, all tend to overtax the ability and knowledge of the average man. It is even necessary for the expert to keep on practicing daily so as to improve his technique and increase his experience.

The use of regional anesthesia whenever possible is the only way of developing the method, and assuring success at all times when failure is least desired. The injection of weak patients once in a while is far from being sufficient to train a man in regional anesthesia, that is, to offer him the opportunities of mastering the difficulties of technique for the injection of individual cases. The occasional reaction of a strong patient to over-dosage is a lesson which the operator is glad to call to memory when called to carry out the same procedure on a poor surgical risk. Up to this time the profession cannot estimate the value of regional anesthesia, since no effort has been made to promote its study and widespread use.

In different regions of the body the regional anesthesia is accomplished with varying degrees f success. For example, in abdominal opera-

tions it is very difficult and requires long practice. Here the intraspinal block is much more easily and quickly accomplished and gives a greater percentage of good anesthesias than the paravertebral block or the splanchic analgesia. Again, as a rule, the injection of lean patients is always easier than the rest, as fat patients do not lend themselves with ease and so become better subjects for spinal anesthesia, with the exception of instances where the procedure in view is one wherein the regional is always good, field block, for example.

The advantages of regional anesthesia cannot be denied even by those most skeptical on the subject. It is not dangerous to life, complete muscular relaxation is realized, thereby facilitating the most delicate surgical procedures. In abdominal surgery you have a negative intra-abdominal pressure which is undeniably of great value. The central nervous system on which the vital functions of life depend is left intact. The brain is protected from local operative injury. The psychic stimulation of the brain cells is reduced to a minimum. The combination of these, as we see, must necessarily reduce the operative shock considerably. There is no post-operative nausea or vomiting, thus no distressing the patient and, at the same time, there is no additional strain on the sutures. Normal diet is not disturbed if the nature of the operation permits. The postoperative pain is not any more severe in surgical cases which have undergone regional anesthesia than in those of inhalation narcosis, although their mental condition is much more clear and the absence of the nausea and vomiting allows them to take a much more accurate account of themselves. Edema of the lungs, pulmonary conjestion or postoperative pneumonia will not set in if the usual precautions are taken.

In minor surgery, regional anesthesia is practically imperative; and for all operations where the general condition of the patient, the nature of the disease, and the region of the lesion contraindicate inhalation narcosis.

In conclusion, let me say that the beginner cannot be expected to be successful with his first attempts; partial failures can be remedied by a first stage or short period of inhalation narcosis. There is no shame to have to use the combined method when it was intended to be regional anesthesia alone, for the judicious use of mixed anesthesia is much more preferable to inhalation narcosis alone, and the method should not be abandoned for this reason, but one should keep on trying until the technique is perfected to such an extent that total or partial failure becomes exceptional.

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DISCUSSION

Dr. J. S. Helms, Tampa:

I have come to the belief that general anesthesia as administered by the respiratory tract should be avoided where it is reasonably possible in surgery. This puts us up to the necessity of getting some substitute. We have for a long time used the method of infiltration of various drugs to accomplish this purpose. Recent developments in regional and block anesthesia have been in marked advance toward obtaining that alternate aim which we most desire.

I have found that some of the methods of anesthesia probably have not had the value which we have placed upon them, perhaps, in the past. Rather, on the other hand, I think it is better, perhaps, to have the patient in full possession of all his conscious faculties, and that he be controlled as much as possible by the psychic influence of the operator. I think it is very necessary for one who expects to do this work successfully to cultivate a certain sort of method for obtaining psychic control of the patients, because that is a very important factor.

I desire to express my appreciation for the paper, which is very instructive, and Dr. Jobson, I feel, is a competent speaker on the subject.

Dr. L. A. Peek, West Palm Beach:

When every surgeon is a competent anatomist, when all surgeons' helpers (both assistants and nurses) are trained psychologists, when the chemists have elaborated even a better regional anesthetic than novocain—then will local anesthesia come into possession of the whole field and the use of chloroform, ether and gas will be relegated to oblivion.

Are these dreams? If so, they are dreams that are coming true. While listening to the excellent paper of Dr. Jobson I was impressed with his description of what the surgeon ought to do and ought to be when using local anesthesia, and what manner of operation ought to be done with the use of local anesthesia. For he told the sur-

geon to be patient, kind and gentle, not only to the patient but also to his tissues. Now every surgeon at all times should be patient, kind and gentle and not handle the patient roughly, neither as to his mind nor as to his tissues, always remembering to use a sharp knife very carefully, to touch raw tissues as little as possible, both on account of possible infection and on account of traumatism.

Rough men who handle tissues and patients roughly should be eliminated from the ranks of surgeons. There is no surer method of reaching this desirable result than by the general use of local anesthesia. And let us not await the better anesthetic from the chemists before using this method. We can get almost perfect results now. If eventually we shall all use the method, why not now? I have great hopes, however, that the chemists will get something which, when injected subcutaneously, will have a special attraction for the nerves of sensation, such a predilection for them that it will anesthetize them completely and will not affect the other tissues deleteriously in any way. That is what we want and we will get it if we use what we have to the limit of its usefulness.

Dr. J. E. Boyd, Jacksonville:

After fifteen years' of experience we have come to the conclusion that it is unnecessary to hurt our patients. Every patient is a law unto himself. Each patient is handled as an individual. One patient requires to be talked to and another wants to be still, etc.

The solution: The longer we use local anesthesia, and our cases have run somewhere up into the thousands, the more we keep away from large per cent solutions. We have gotten down to a one-half per cent solution and find that it accomplishes the same amount of anesthesia and lessens the danger of postoperative complications.

There is one point in the paper that I do not agree with. If you do upper abdominal surgery under local anesthesia you are going to have almost the same number of postoperative complication as you would under a general anesthetic. I make that statement from long experience. I have been surprised at the amount of pulmonary complications following upper abdominal surgery under local anesthesia.

As to needles: I am still using steel needles and I am going to keep right on using them. I have tried every kind of needle that has been put on the market, including platinum and iridium. I am here to tell you right now that if you use steel needles and when through with your operation discard them, you will lessen the chance for pain and improve your technique. Be sure that you are going to have a sharp-pointed and cutting needle. In my opinion that is a vitally important proposition.

We are taking up now the parasacral block, according to the method of Braun. We are trying to develop that and see in a series of cases just what advantage it is—if it is going to be as claimed by Braun.

Dr. E. H. Teeter, Jacksonville:

I think this is one of the most important papers that has been read before the meeting. There are just two points that I want to emphasize.

I have done a great deal of work under local anesthesia and also some under spinal anesthesia. I had two hernia cases, one was done under local anesthesia and the other under spinal anesthesia. I gave the spinal injection about twenty minutes before the operation. The patient apparently felt no pain. It was a perfect operation, and there was no nausea afterwards. He made a wonderful recovery.

Therefore, I think the spinal anesthesia is a mighty good thing, too.

Dr. J. Brown Farrior, Tampa:

There has been a great deal said on this subject, which has all been good, and since I, myself, am a pioneer in local anesthesia in Tampa, I feel that we can as much congratulate the Florida Medical Association upon the presentation of this exhaustive history as we can congratulate Dr. Jobson for presenting it.

I would like to stress one point that has already been mentioned—that is the psycho-emotional side of this thing. Now, in the first place, when a patient is going to have an operation and the anesthetic is going to be a local anesthetic, I believe that the easiest way to handle that patient is to make him realize that he is going to have something done and that you are not going to have something done to you. Let them understand that they are there for their benefit and that they must realize that there is some feeling, but as to the amount of pain it is practically nil. The control of your patient is necessary, and I believe the failure of most men in local anesthesia is due to the fact that they did not let the patient understand the importance of that operation. Another point that I would like to stress: Keep the pa-

tient's eyes open. I refuse to administer a local anesthetic until that patient looks me in the eyes and admits that he is there for his own sake and not for my sake.

As I stated, I am a pioneer in local anesthesia—started using it in Tampa twelve years ago. I never put a patient to sleep if I can do that operation under a local anesthetic, or by blocking.

Dr. Cline, Tampa:

I want to emphasize the use of psychology with our patients. Scientists have done a great deal of research work along this line for the past five years, and I have found that there is a great deal of importance to this subject.

One of the main points along that line is to differentiate to your patient the difference between feeling and pain. So many of us will tell our patients that we do not intend to hurt them, but that they will feel it. Now, we feel everything that happens to us as long as we are conscious, but not necessarily pain. It is hard to explain to our patients the difference between feeling and pain. Let them know that they are going to feel your instruments, but that they are not going to feel pain. You will find that this helps a great deal. And, keep your patients' eyes open. This gives cooperation that you do not get when their eyes are closed. Give them a newspaper or a magazine—let them read and read out loud.

Also, a great many cases of shock and collapse are due to hasty injections. I have forced some of my patients into shock and collapse by injecting 2 c.c. of 2 per cent solution, and by injecting it too quickly into the system, and I believe we could keep down some of these cases by making slower injections into the body. Give the tissues time to get used to this drug, and do not shock them too quickly by hasty injections.

In regard to the type of needle to be used, I would like to advise against or rather discourage the use of steel needles. Needles of 20 per cent iridium and 80 per cent platinum can be sterilized following each injection and you are absolutely sure they are sterile. I would suggest, also, that needles always be used just a little bit longer than is necessary, to avoid the possibility of leaving a broken needle in the patient.

Some of the postoperative pain and tenderness the Doctor referred to is due to improper solutions. I lay a great deal of stress to having a perfect isotonic solution, neither a hyper- nor a hypotonic solution. When the solution is too hot or too cold we get a lot of our postoperative upset and osmotic pressure, because it is our tissue cells which receive the anesthetic, and which are destroyed when we do not use the isotonic solution; it is through these tissue cells that we get a lot of our postoperative pain.

Dr. R. B. McIver, Jacksonville:

I would like to call attention to the question of reaction. We have seen two. One I observed in a pelvic case which was operated by Dr. Field, and another where I did a caudal injection for cystoscopy.

The first case, that of Dr. Field, was a caudal and transsacral injection for pelvic repair. In this case there was a tonic convulsion, which came on about five minutes after injection had been made, lasted for ten minutes, and was accompanied by rapid pulse. The blood pressure was not taken. At the expiration of about ten minutes the operation was continued without difficulty.

In my own case, after injection of 30 c.c. of 2 per cent solution of novocain, caudal injection, the patient had a tonic convulsion, contracted pupils, rapid pulse, was dyspneic and had sense of impending disaster. This lasted twelve minutes. At the expiration of that time he quieted down, and his pulse, which had been 130, returned to normal. I then proceeded with the cystoscopy and pyelography without difficulty.

In the last issue of the *Therapeutic Gazette* they report a case in which they injected a solution to represent 9 gr. of novocain. That case was to have been a second stage prostatectomy. He developed a reaction on the table with serious symptoms, and was treated for shock. The head of the table was lowered, he was surrounded with hot-water bags, and given, as I remember it, three hypodermics with stimulants, and returned to his room after partial reaction on the table. The operation was not done at that time. A week or ten days later, the report states, the case was successfully operated.

In the second place, I want to call attention to the ease that is maintained with this method in the field of urologic surgery—not only as regards the operative procedures themselves, but as regards the examinations, which are often painful and which discourage the patients from having the necessary follow-up work done. Very often these cases require repeated cystoscopies, and if the first examination is attended by a great deal of pain, it is hard to get the patient back. I re-

member one of Dr. Boyd's patients, not so very long since, with T. B. of the genital tract, in which the memory of a cystoscopy five years previous made it impossible for us to do one without gas anesthesia. We were subsequently able to do the necessary follow-up work after gaining the patient's confidence and giving a simple caudal injection of 20 or 30 c.c. of as low as one-half of one per cent novocain. Certainly no more than four or four and one-half grains should be given at the outset. In my experience with cystoscopies, which is not very great—probably 20 or 30 cases at the present time—it is possible to do these examinations without any pain and without any injection in the urethra. Also, operations such as nephrectomies, prostatectomies, extra-urethrotomies, etc., can be successfully done.

Our experience in the field is small so far, but we have two kidneys, ten prostatectomies, and about fifteen extra-urethrotomies, which have been successfully done by this method.

Dr. Walter D. Webb, St. Augustine:

I can add very little to Dr. Jobson's excellent paper. I feel that he has covered it very thoroughly and very conservatively. I do feel that it is all right, and that in the future there will be a much more extended use of local anesthesia.

During my twenty-five years of general surgical work I have been using local anesthesia more and more. I think I did the first hernia under local anesthesia in 1899. And since then I have used local anesthesia at every opportunity when I felt that I could dispense with the general anesthesia. I not only used it considerably myself, but have had it used upon myself. I have had a major surgical operation under regional and block anesthesia, and there was very little discomfort both during and following the operation.

I do feel that there are many cases in which, of course, we cannot use local anesthesia as yet. It is difficult to get a perfect anesthetic where there is acutely inflamed tissue, although I have done an acute appendix under local anesthesia—not by choice on my part, but in cases where there was some real contrary indication to the use of the general anesthesia. I had one case very recently, where the patient absolutely refused to take a general anesthetic, having taken a general anesthesia at some previous time and absolutely refusing to take it a second time. This was an acute appendix. We opened and drained, but did not reach the appendix—a very acute case.

My experience has been more confined to cases of regional and field block anesthesia than to the more recent spine-block and intraspinal anesthesia, which I have never practiced.

I can add very little more to the discussions that have gone before my talk, but I feel that we should all extend our use of local anesthesia.

Dr. Alex M. C. Jobson (closing):

In conclusion, I would like to thank the doctors for their very generous discussion on this paper.

There is not much more that I can say except from a psychological standpoint. Some of the clinics in France are going so far as to introduce singing, victrolas, and different kinds of music. They first determine the type or kind of instrument that will appeal to the patient on the table, and then they will introduce this into the operating room. According to some of the articles in the French journals, this method is being worked out successfully.

I agree with Dr. Boyd entirely that you will get complications in upper abdominal surgery, but I do not think that you will get any more with regional and block anesthesia than with a general anesthetic. As to acutely inflamed tissue, you can do that painlessly also, provided you inject the nerve before it enters this inflamed area, and then put a field block around your area. In this way you will get away with it.

As to the rapidity of giving a regional anesthetic: Never give it fast. Always take plenty of time in giving it. When you rush the patient you upset his mental equilibrium, and he gets "nervous," and begins to worry. A little pain at the onset will influence a patient so that when you do start the surgical work they interpret everything as pain.

MAXILLARY SINUSITIS, CHRONIC—A SURVEY OF SIXTY CASES*

JOSEPH W. TAYLOR, M. D., F. A. C. S.,
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The object in presenting this survey is to show the relative frequency of this type of infection, the value of the transilluminator and X-ray, the chief symptoms, and the method of treatment which has proved most valuable in the hands of the writer.

*Read before the Fifty-first Annual Meeting of the Florida Medical Association, held at Orlando, May 13, 14, 1924.

In the examination of six thousand cases for various eye, ear, nose and throat conditions, we found one hundred had a chronic maxillary infection, or an average of 1.6 per cent. This we consider a very high per cent when it is taken into consideration that a great number of these patients came in for refraction, foreign bodies of the eye, tonsilitis and various eye, ear, nose and throat troubles. The writer believes that a great number of maxillary sinus infections are overlooked. In an effort to locate focal infections, we look to the teeth and the tonsils, with the results that the sinuses are often neglected. This is frequently observed where molar teeth are extracted, and an old latent chronic maxillary sinusitis is caused to flare up, with the alveolar opening failing to close.

At one time it was thought that all maxillary infections came from the teeth—ascending infection. Then it was decided that the teeth caused a very small per cent, that the majority was from the other sinuses (ethmoids and frontals)—descending infection.

Freer has recently stated that it is his belief that practically all sinus infections were of the ascending type. While his estimate may be too high, it shows the trend favorable to ascending type.

Dutrow stated that his cases showed 65 to 70 per cent of the ascending type. It is very seldom that we find a chronic maxillary sinusitis in a case where the dental line is unbroken. If the teeth are examined and a careful history regarding them obtained, it will be found in a great majority of cases that a first molar tooth more frequently, and very often the second molar or both, have been extracted. Many crowned or filled molar teeth whose pulp and nerve supply have been killed, will also be noted.

In our series of cases we find the ascending type in 67 per cent. In the series of eighteen cases in which the Caldwell-Lue was performed, 50 per cent of them were referred by dentists. Due to the alveolus failing to close, 20 per cent of the total series were referred by dentists.

The writer would like at this time to congratulate the dentists on the manner in which they are now handling these cases. They realize that a maxillary sinusitis can not be treated successfully without first closing the oral opening and establishing intranasal drainage. For that reason they are now referring them to the rhinologist for treatment.

Transillumination, if done properly, is a great aid in the diagnosis of these cases, due to the thickness of the external wall of the maxillary sinus and the variations in pigment. The latter is especially true in cases of brunette or those cases which lead an outdoor life and take on our characteristic Florida tan. The palato facial or Heryng's method is not so accurate as the orbito-platobucal or Briggs' method. The latter method will even transilluminate the antrum of a negro.

Briggs' method is as follows: "The patient is placed on a high stool in a dark room and is requested to tilt the head backward and open the mouth. The cheek is retracted with a tongue depressor so as to bring into view not only the hard palate but also that part of the floor of the antrum in the buccal cavity outside and above the molars.

"The light is placed against the lower lid above the infraorbital notch, pushed inward and pointed downward until the infraorbital ridge is well passed, when an area of pink will be seen in that part of the roof of the mouth and buccal wall on either side of the alveolar process corresponding to the floor of the antrum."

It does not require a very dark room, one where the shades are partially drawn is sufficient. Practice with this method will soon cause us to notice the slight or great difference in the two sides.

To varify this, the X-ray can now be made or an exploratory puncture, and the cavity irrigated. We make it a rule to transilluminate each new case that comes to the office. In this way we have been able to discover several infected sinuses that otherwise would not have been diagnosed. Every physician, regardless of his specialty, should transilluminate every patient examined. It is quickly and easily done with no expense to the patient. Then should you find a questionable shadow, have an X-ray made as a check. In our office the transilluminator has checked correctly with the X-ray, and clinical findings in 93 per cent of the cases where an infected maxillary sinus was diagnosed. The transilluminator is also an aid in noting progress during treatment; as the discharge gradually lessens, the light reflex will increase.

The chief symptom for which the patient came for relief: Headache, 30 per cent (in these cases the pain is usually referred to the affected side, the temple and forehead being the chief area complained of); nasal discharge with postnasal dripping, 16 per cent; pain over maxillary sinus, 13 per cent; failure of alveolar opening to close

following extraction of molars, 27 per cent; asthma bronchial, 6½ per cent; refraction, 3½ per cent; defective hearing, 3½ per cent.

Cultures on forty-five cases showed staphylococcus albus and aureus as the predominating micro-organism. In fifteen cases no culture was obtained.

In this series there were two cases of sarcoma of the maxillary sinus. One was inoperable. The growth had destroyed the inner wall of the sinus causing a large perforation of the septum due to pressure necrosis. The tumor filled the nasal space of the opposite side. The other case was confined to the maxillary sinus and ethmoids with beginning necrosis of the dental ridge. Operation: Large external opening (permanent) through the cheek. Sinus cleaned out, also extenuation of the ethmoids. Radium applied. Recurrence after ten months.

The radical operation via the oral route was performed on eighteen cases. Four cases it was necessary to operate on both maxillary sinuses, due to bilateral infection. Eight cases the intranasal operation, with treatment from three to six weeks, preceded the radical. Ten were operated on radically without attempting intranasal drainage. Average duration of treatment for radical operation two weeks. No recurrences to date.

Dutrow says: "My end-results in some forty-odd Caldwell-Lue operations performed during the past three or four years have been eminently satisfactory, from every standpoint. Prior to that time I was rather discouraged with my treatment of chronic antrum infections, but after careful study and strict attention to operative detail, better results were obtained.

Intranasal operations in 42 cases: Cures, 74 per cent; failures, 26 per cent; reinfection after apparent cures, 8 per cent; average duration of treatment, three months.

In all cases where the sinus infection was cured, the patients were relieved of their chief symptoms. There was improvement in their general condition as most of them showed signs of toxic absorption.

The following case histories are used as an illustration:

Case No. 1—Mrs. E. M. L., aged 37, married, white. Occupation, housewife. Came to the office for the first time February, 1922, for relief of tinnitus and deafness. Family history: Two brothers and sister deaf; two of them so deaf that they use acusticons. Social history: Married fourteen years, three children healthy. No miscarriages. Wassermann negative. General physical condition good, except patient feeling tired. Examination showed catarrhal deafness bilateral. Transillumination marked clouding of left maxillary sinus, other sinuses negative. Nose, small spur to left along suture line. No nasal discharge. Throat, negative. X-ray report, marked clouding of left maxillary, other sinuses clear. March, 1922, sinus opened lower turbinate route. Large quantity of thick greenish pus washed out. Sinus irrigated twice weekly. Four weeks later, transillumination negative. No secretion in sinus. Patient states that she feels much better physically, tinnitus and deafness have improved.

Case No. 2—Mrs. A. J. A, aged 68, married, white, native of Canada. Occupation, housewife. Came to the office the first time November, 1922, to have maxillary sinuses irrigated. Family history, negative. Social history: Married at age 19; ten children, all living and healthy. No miscarriages. General condition fair. Present history: Patient operated two years before in Canada, intranasal route bilateral. Had been advised to have radical by rhinologist in Canada and Chicago, but refused. Examination of ears and throat negative, both middle turbinates bathed in thick mucopurulent secretion. Transillumination cloudy for maxillary. An X-ray was not made as there was an opening into both maxillary under middle turbinates. Sinuses irrigated, large quantity of thick greenish yellow pus came from sinuses. She came to the office two to three times weekly for irrigation until she returned to Canada in April, 1923. The treatment was continued during the summer and this fall she returned to Florida. We have treated her at least once each week up to the time she sailed for Europe (April 15, 1924). Her condition this year is no better than it was when we first saw her eighteen months ago. The interesting part in this case is that she has apparently no systemic effect from the infection, probably due to free drainage and regular treatment. This is a typical case for radical operation. This was advised, but refused.

Case No. 3—Mr. G. S., aged 33. Occupation, mining engineer. Family and past history negative. Chief complaint: Pain in eyes. Lids feel dry. Headaches frontal, not affected by using eyes. Patient states that he feels sluggish, that work is difficult, and thought perhaps he needed glasses. Examination: Eyes normal from a refractive and diseased standpoint; nose, negative; tonsils, removed six years ago; transillumination showed clouding of left maxillary sinus. Other

sinuses clear. Radiograms verified these findings.

On July 18, 1923, the antrum was opened under middle turbinate. Large quantity of thick greenish pus washed out. This was repeated each week for several weeks. But as the patient lived sixty miles in the country, could or did not return for regular treatment. He was not seen again until December, 1923. At this time he stated that he was feeling fine up to three weeks ago, that during this time he had gained twenty-one pounds. The past three weeks he noticed the discharge had returned, and in that time had lost ten pounds, also that all his previous symptoms had returned.

This case shows the effect of a purulent sinusitis. Also the indication for a radical operation, where it is impossible to return for regular treatment over a long period of time.

Case No. 4—Mr. G. H. D., aged 49. Occupation, machinist. Referred by W. A. Dean, D. D. S. Family history of no consequence. Chief complaint, alveolus did not close following extraction two weeks previous. Increased nasal discharge, also discharge from alveolar opening. The patient stated that he had had a slight nasal discharge from the left side of his nose for several years, that he was subject to headaches, and the past two weeks they had been severe at times, left side especially. Also his general physical condition was below par.

Examination: Throat, normal; nose, septum slight deflection to left. Pus in region of middle turbinate; right side of nose, normal; transillumination showed clouding of left maxillary; radiograms showed clouding of left maxillary; other sinuses clear.

Intranasal drainage via lower turbinate route. Daily irrigations for two weeks, tri-weekly for ten weeks. At this time the discharge was little better. The alveolus had not closed. A Caldwell-Lue operation was performed. Our operative record shows there was an opening in the anterior bony wall of the antrum the size of a large pea. This was due to neurosis of the bone. The cavity was filled with granuloma and polypus. The sinus was curetted, also the granulation tissue around the alveolus, making a large opening from the antrum to the oral cavity through the dental socket. To my surprise, this opening healed in a few days as did the sinus, and at the end of two weeks the patient was well.

Conclusion: It should be part of the routine examination to do a transillumination on all cases regardless of complaint.

The maxillary sinuses are frequent foci of infection. It is easily diagnosed and should not be neglected.

Where the dental line is broken, crowned or filled molars are found, we should look for antrum infection.

So-called cases of nasal catarrh should cause us to think of the maxillary sinuses as the seat of trouble.

The radical operation offers the quickest, surest and most permanent results and should be the method of choice, if the patient can not conveniently submit to a long course of treatment, or if there is not marked improvement after two weeks' treatment intranasally.

DISCUSSION

Dr. J. Brown Farrior, Tampa:

This line of statistics goes a little ahead of anything I know of. Regarding patient's examination, the Doctor does not state to what limit his examinations are carried. If it was transillumination alone, why you would have to regard that as not much of an examination. Now, as to transillumination: I have had the privilege of being on the floor of the Southern Medical Association when Dr. Bridges spoke on this subject—seems like it was only yesterday. In his opinion transillumination is an aid to diagnosis, but not a great aid. Transillumination does not amount to anything in my experience.

I want to prove this further by disclaiming one statement that the Doctor makes—that this is simple and easy, a diagnosis of chronic sinusitis in the maxilla. I don't know of anything in the whole field of nose and throat work that is any more difficult to do than make a positive diagnosis of a chronic sinusitis where there is no history of acute pain, acute flow of pus, or that sort of thing. And after a chronic sinusitis has been established for some time there are but very few symptoms; in fact, practically nothing is complained of. If all the eye, ear, nose and throat men will arise and talk on this subject, they cannot but agree on this.

Now, here is further proof: The X-ray, which I like to regard as a great aid in diagnosis, often leaves us still in confusion and doubt. We have hundreds of patients on record with films made to determine chronic sinusitis where we suspected it. We have found a clouding on both sides. We would puncture and get no pus, and then do a radical and still find no pus. Also there would

be no polypi. And, therefore, we would have to disregard both our transillumination and our X-ray. If the X-ray would reveal a cloud or haze, that is plain, but if it can determine anything other than a chronic spot of bone, I am not prepared to say. I wish the X-ray men would say something on this subject. It is an important question, and one which has been the source of a great deal of hard work with a great many disappointments to me.

Now, as to the ascending type of infection: I have heard that discussed, but I think you will find the percentage of such cases low, that is where we have it with toothache and bad teeth improperly filled. We must say that the descending type of infection is more in our experience the cause of maxillary sinusitis than the teeth. In chronic maxillary sinusitis you may have the tooth with the cavity, but I think that theory is practically nil. Why, because we must not disregard the fact that they are under the ethmoidal cells and frontal sinuses, and if these are involved you cannot ask if the infection comes from the ascending type. How in the world can you ask that?

Now, as to the operation: For a long time I have depended practically entirely upon the intranasal radical, but have gradually worked out of it to another method. This consists of taking out part of the bone and making an opening which will be permanent. With this method I have had disappointment in only one case. This patient had a polypi. That patient came back in three or four months after the operation. The polypi had grown out, flattened and filled up the nose. I did a radical, cauterized all points, packed, and the patient got well. Occasionally there is a case that we fall down upon.

You take a case where the tooth has been pulled and leaves an opening. Some attempt to just curette the floor of the antrum, never reaching the antrum wall. These cases must require a radical maxillary operation with no modification. What we want in this work is a 100 per cent operation. I want to say that now, because once before when this subject was discussed, I depended on the intranasal radical for a 100 per cent operation. It must be an external radical operation with no modification. Make an external incision and take down the wall of the antrum, the nasal wall, not disturbing the inferior turbinate bone, but taking out sufficient to give the proper opening.

Dr. A. H. Freeman, Jacksonville:

I just want to discuss one point in regard to transillumination. I think we need to be rather cautious about the use of transillumination, that is you do not want to depend entirely on transillumination for anything, because if you do you will be lost. There are several reasons for this. Anatomically, there are just as many different sizes and shapes of sinuses, maxillary or any of the paranasal sinuses, as there are differences in faces and people. In other words, there are no two alike. Consequently you get no two pictures alike with transillumination. There will be a general similarity in healthy cases, but you will then get a difference in your sinuses on the two sides, and you may think that one is diseased when they are absolutely normal. Keep that in mind. The caution is this, never to depend entirely on transillumination. You must have something else to support it.

Dr. Cline, Lakeland:

As for diagnosis, the various methods save puncture through the anterior nasal antrum wall and irrigation are not dependable.

When we get a shadow with transillumination or X-ray we proceed to make a quick, simple puncture through the nasal antrum wall and irrigate. If you get pus, you know where you are, and if you fail to get pus you know there is none or little infection. Once you find pus and demonstrate the case to be a chronic condition you are wasting time with irrigations. The only procedure then is to go through the canine fossa, make as large an opening as is required to do a thorough curettement, and then make a counter opening in the anterior nasoantrum wall as large as possible to save the inferior turbinate. In this way you will practically get 100 per cent cures.

Dr. Clarkson, Jacksonville:

I am not a physician, but am intensely interested in this subject. I believe that most men doing oral surgery feel that the antrum is a "No Man's Land." The rhinologists have been using it, and also the general surgeons. But, when it comes to the form of the operation for clearing up these antrum conditions, we have not come to any definite conclusion as to whether the rhinologist is right or whether we are right in the mode of entry. I think it would be a very proper procedure for us, who are doing oral surgery, and the rhinologists to get together at some time and some meeting where we could thrash this thing

out and really come to some definite conclusion as to the best mode of entry in operating on these cases.

Dr. A. K. Wilson, Jacksonville:

I am sure we all enjoyed this paper of Dr. Taylor. It is a subject that should be brought up.

Chronic sinusitis probably gives us one of the most important foci of infection that we have, and the antrum is the most common sinus that is infected.

In regard to transillumination, I consider it as one of the most deceptive means that we have in diagnosing sinus infections. The X-ray, on the other hand, has a relative value of 85 per cent. That has been proved out in the University of Pennsylvania in a large series of cases. That does not mean that the X-ray will give us 85 per cent of our diagnoses, but it denotes that the X-ray is not positive or absolute in its findings.

We can only hope for results from an intranasal operation by producing gravity drainage and giving cleansing irrigations. A great many of these cases will not recover from such an operation. In that condition, we have to do a radical operation—that is, opening the antrum from the anterior wall, curette the cavity, making a counter opening under the anterior end of the inferior turbinate. In chronic sinusitis we most often have a stimulated growth of bone partly closing the natural opening of the sinus, and in this way the sinus has not its normal ventilation.

The natural opening of the antrum in lower animals is placed near the floor of the cavity. Since man has assumed the upright position the antrum has revolved on its axis, placing the natural opening well up from the floor. Hence in case of a suppurative infection the antrum can not drain properly to favor spontaneous cure.

Dr. Samuel F. Smith, Tampa:

I wish to agree with Dr. Taylor on the emphasis placed on the results from the radical operation when necessary, and also the results and the help gained from the X-ray and transillumination, although I must confess to leaning toward conservatism regarding operations in and about the nose. I do not mean by that that I do not favor operations whenever necessary, but I always like to feel entirely certain that as far as possible it is necessary before proceeding with at least a radical operation.

In regard to the place of operation: It has been my experience and is my idea that in cases of infection from the nose that it is well to make the intersection over the nasal chamber, and in cases where the infection or the trouble comes from the alveolar processes or from the dental region, that it is well to proceed from this location.

I find that a great many patients presenting with symptoms indicating maxillary sinusitis, where the X-ray and transillumination show nothing definite, although they have the definite symptoms of pain and fullness and other things going with it, have responded to treatment along the line of serum and vaccine. I have used it quite extensively. A great many cases which show no considerable accumulation of pus necessitating an operation at once, seem to clear up promptly under the use of this treatment, and I also find that even where operation is necessary in the radical, that by supplementing the operation with the use of serum, autogenous of course where possible, that it seems very much to help in clearing up the situation and in shortening the period of treatment by irrigation and other methods.

As the Doctor said, the only way to accomplish definite results where it does not respond within a very reasonable length of time to proper treatment, is by having the radical operation, and this, as the Doctor has said, should be complete and thorough.

Dr. Joseph W. Taylor, Tampa (closing):

You noticed that we stated at first that transillumination was an aid to diagnosis if done properly. It is necessary to have the proper light and one of proper voltage so that you can increase or decrease your light. I do not want it understood that we take transillumination as a diagnosis and go ahead and operate. As to the diagnosis, it is comparatively easy if we find that the X-ray and transillumination will check in 85 per cent of the cases. Most men in doing other lines of work, if they could have something that will make the diagnosis in 85 per cent of their cases, I think, would be very well satisfied.

It is best in these cases and any questionable cases to make a puncture and irrigate as Dr. Cline stated, which does no particular harm and is comparatively safe.

As to the ascending type of infection: I have not seen an acute case of the ascending type. All of these cases we have are sent from the dentist. Some have been operated within two weeks after

the tooth had been extracted. In these cases we found an antrum filled with granulomas, and in some cases, as in one case we reported, an actual necrosis of the anterior wall of the antrum. It could not have possibly reached that stage within two weeks, and I believe that it was an acute exacerbation of the ascending type of infection.

I would like to say once more as to the radical operation, that it is the only means of absolutely curing these chronic cases. In those cases that we have "cured" by irrigations, we have tried out Dakin's and various other solutions with apparent cures in a number of cases, but we never know when we will get a recurrence. In the radical operation we are practically sure of no recurrence.

PROPHYLAXIS AGAINST PSYCHOPATHIES IN SPECIAL AND GENERAL PRACTICE

TOM A. WILLIAMS, M.B., C.M.,
Washington, D. C.

The Autocrat at the Breakfast Table arrested thinking people by the declaration that to insure well-being he would begin with one's grandfather. Every psychiatrist knows how psychopathy runs in families, and every village boy has remarked upon the queerness of certain families.

Against these trite observations, however, must be placed the individual psychopathy of strong men of unimpeachable heredity under special stress. Such were illustrated abundantly in the shocks of the great war, and in civil life every physician has seen many psychic derelicts who are unique in their families.

Dr. Holmes furthermore goes on to point out that it is not so much the nurture of the grandfather that he is speaking of as it is the nurture the grandson derives from his own parents, whose culture is the product of their parents. As we put it nowadays, environment is as important as heredity.

Eugenists preach the contrary, and seek to deafen us with the contrast between the Jukes family and the Edwardses. On the part of criminologists of today, there has been a return to the pessimistic French doctrine of degeneration, and the born criminal is again the fashion.

While we must not pretend to gather figs from thistles, yet the nurture of the grandfather must not be forgotten. It is significant that in one hundred minutely studied habitual criminals no instance was found by Healy and Spaulding in which the most pernicious environment was not conspicuous. It is also significant that the great majority of the waifs reclaimed from the slums of England by the Bernardo Homes become excellent citizens, for the most part as Colonials.

Nevertheless, although the doctrine of heredity is much misinterpreted, it is a great advantage in the avoidance of psychopathy to be well-born. For instance, an inevitable determinant of psychopathic behavior is that form of cerebral syphilis known as dementia paralytica. A generalized cerebral arteriosclerosis is an insuperable impediment to adequate psychic function. The form of psychopathy known as delirium is the fruit of the invasion of bacteria which are the agent of zymotic disease. Post-alcoholic depression and the spes phthisica are psychopathic manifestations familiar to every physician. Impetuosity and violence to the degree of psychopathy may be the mere manifestations of an over-active thyroid gland; so may lachrymosity and depression of spirit during intermissions of activity. Inadequacy of pituitary secretion is held by many to be responsible for the weakness of character and suggestibility which often leads to psychopathic behavior. Decrease of the adrenal output lowers ambition, and may lead to secondary depression of psychopathic character. The internal secretions of the ovary and testicle are the activators of much of the psychopathic behavior with which the morality so readily invoked has very little to do. A cross-grained temper, which makes life unbearable to the rest of the family, may be less the product of an ill-nature than of a chronic constipation or metabolic inadequacy. To elaborate upon agencies of these and other physical kinds would unduly extend these remarks.

Nowhere is little knowledge so prejudicial as in psychopathology. However, a few words must be said about the psychogenetic factors. Nosomimia of any disease may occur, but though common in some, it is exceptional in others. It is most frequent as a continuation of actual disease, perseveration. The tendency to it after injury became notorious during the expansion of railroading. Its cause then was the myth that the vibration produced spinal commotion. The real mechanism of the condition was expounded in 1909, before the International Congress of In-

dustrial Accidents, at Rome, in my paper, "Traumatic Neurosis in Relation to Babinski's Theory of Hysteria." Medical men, and particularly industrial surgeons, are now on their guard against the induction psychosis, so-called traumatic hysteria. During the Great War there was a tremendous revival of psychopathies which could have been prevented. They were due to another myth—that of shell shock. This myth was also destroyed, thanks to clinical measures devised by French neurologists on the groundwork laid by Babinski in his conception of hysteria.

Sensations referred to the heart and to the digestive organs are particularly fruitful in inducing psychopathic attitudes. The latter are too often the fruit of injudicious attention by medical men. Of the heart, however, it is not necessary for the patient's apprehension to be confirmed by medical opinion, for the choking sensation, the air hunger, the dizziness, the sense of faintness are alarming enough in themselves to provoke, when they are sudden, a fear of consequences almost panicky. This emotion, too, adds to circulatory perturbation. Hence in these cases a sound psychoprophylaxis is essential to prevent a psychopathy far more incommoding than the cardiac condition itself. The so-called effort syndrome is often a mere emotional reaction of this kind. The instance reported at length in my study of "The Genesis of Phobias," International Clinics, 1919, shows the mechanism and the manner of cure very clearly, all in "Dreads and Besetting Fears."

The most important and numerous of these psychogenetic determinants, however, arise in childhood, and for the most part within the family. It is only by a knowledge of the natural history of these that the physician can prevent future psychopathy by giving to the parents and other relatives the sound advice which so many of them are nowadays seeking so earnestly. (See chapter on "Psychoprophylaxis in Childhood," in collected papers on Psychotherapy. Badger, 1909.) The expansion of pseudoreligious and pseudophilosophical sects is an endeavor to respond to this quest. In our own profession the mental hygiene movement is its expression. The need is, of course, best fulfilled by those physicians equipped with a special study of the disorders of the nervous system, more particularly in its psychological aspect. But nothing is more fraught with dangerous counsel than an adviser prematurely specialized in psychiatry. Nowhere is a little knowledge a more dangerous thing.

The child ignorant of the world is highly susceptible to every passing suggestion. The summation of suggestions with some particular trend will deform his character. Very commonly the anxious solicitude of a fond mother leads to a timorousness of character which never leaves one. It does not often lead to so dramatic a situation as that of a boy of eight who when out of sight of his home objectivated his fears into leaping wild animals about to seize him, and would scurry away in panic. When he explicitly comprehended the role of his imagination in this and deliberately braced himself beforehand to counteract the impulse to flee he soon learned to master his phobia. (Psychogenetic Disorders in Childhood. A. J. Med. Science, 1911.)

An over-ambitious and exacting father may induce an anxiety in a child so great as to lead to stammering or other tic, or a loss of confidence, detrimental to future efficiency. I need not illustrate, as several examples will be found in my book, "Dreads and Besetting Fears."

Seclusiveness of nature is a psychopathy most detrimental to social and personal happiness, although it sometimes may be favorable to vocational success, for a time at least. It is often the fruit of a foolish shame which may dominate a family on account of lack of wealth, faulty breeding or personal appearance. Over-tall girls may be victims unless carefully dealt with. So may insignificant-looking boys. Red hair has been a cause. Scanty hirsutes in men and those overabundant in women have induced introverted behavior. There is scarcely a personal peculiarity which could not be incriminated here, and yet the same peculiarity in scores of others is without psychopathic effect. It is not the peculiarity itself, but the set of the mind towards it which is the pathogen. That set is induced by the family as a rule. A child can be indifferent to jibes from those not near to him, or he may fight them; but he cannot do either in the dependency of domestic life.

The foregoing types of mental attitude conduce to a psychosthenic reaction to life. When the dominant note of a child's upbringing is family pride, a paranoidal attitude is to be expected, especially when the psychic resources are not commensurate with that pride. A chip on the shoulder, in the absence of an outlooking and penetrating personality, is a dangerous piece of lumber to be burdened with.

Prudery is another attitude essentially of family origin, although often gained exteriorly also.

It has been responsible for thousands of psychopathic shipwrecks, but is rapidly falling into the background as a source of danger in these days of illumination.

Morbid attitude towards health are a more prevalent danger today. There are two extremes, one of these has been increased by the great attention paid to hygiene since the discovery of the nature of bacterial disease. Childish valetudinarians are seen by all pediatricians, who are not always guiltless in their manufacture. The preoccupation of the mother who has been reading popular articles on health with little Susan's stomach, little Charlie's chest or little Billy's bowels would be laughable were it not so serious for the child. The little thing either becomes preoccupied by every morsel he eats and every pain and becomes an early victim of nosophobia, or he becomes disgusted with such over-solicitude, goes to the other extreme and ignores the danger signals of discomfort and pain.

The opposite vicious attitude towards health has come into fashion more recently, and particularly since the dissemination of knowledge that disorders may be psychogenetic and may be removed by psychological means. Particularly responsible for this misfortune is the doctrine of so-called Christian Science, and even more so that known as New Thought, because the latter makes an appeal without reference to religion, and hence can be embraced by those of any denomination. Its claim is based on grounds allegedly purely scientific, the fallacies of which can be grasped only by those versed in the physiology of the nervous system, with which the laity are as a whole unacquainted, and in which few medical men are able to enlighten them, because even they were not until recently acquainted with the psychological aspects of human physiology, without a knowledge of which the specious arguments of amateur psychotherapists cannot be refuted.

The practice of these cultists has penetrated far beyond their immediate followers. By a kind of illogical diffusion it has affected many medical men's practice. It is responsible for such a situation as the following:

A girl in her late teens began to sleep badly, became anxious about her studies, lagged in her work and complained of fatigue. Her physician, finding no sign of lacterial disease, concluded that her condition was the expression of a morbid imagination and advised much activity, social life and exercise, including very long walks. They persisted in this advice even though extreme fatigue ensued, which would disappear after a few days in bed, after which also the other symptoms would be alleviated. All this they attributed, and partly with reason, to the tedium of bed and the desire of the child to leave it in order to enjoy life once more. The patient became progressively worse over a period of four years until seen by me.

Now, it does not at all follow that because no structural defects nor bacterial invasions are discerned that a condition must be psychological; for functional inadequacy may be the expression either of extraordinary stress or of low stamina, without any psychogenetic factors whatever. In this instance a hypoplastic constitution was perhaps a factor; but the chief factor was an excessive kinetic drive induced partly by the ambitions of the parents; but perhaps more especially by the fervor of the child in the pursuit of the more cerebral satisfactions derived from literature and arts. The result was an exhaustion of the kinetic drive mechanism, so that when I first saw the patient, after the years of incorrect therapeusis by urging, the blood pressure was as low as 90/60 and the general asthenia was most profound.

It was only after months that the patient was restored to functional efficiency by giving her and her mother an understanding of the need for respecting the vegetative requirements with extreme watchfulness, and never allowing her enthusiasm to carry her beyond the point of early fatigue. In addition to this physical adjuvants were prescribed; the most valuable of these was the pressor substances contained in the adrenal and pituitary glands. The latter were for a time injected subcutaneously, with an effect astounding to the patient and friends. But the improvement was not permanent until an atonic colon, a consequence of the extreme asthenia, had also been dealt with mechanically.

Some have objected to psychological solicitudes on the ground that the family is a microcosm of the world, a school of adaptation from which the child should not be protected by cotton wadding, and they point to the disadvantageousness of being an only child on these grounds.

These objections are no more reasonable than would be those against better sanitation, the elimination of infection, the inoculation against disease and the provision of proper clothing and food, especially during the period of growth. No one objects to the prevention of physical defects

by the proper care of children, except a few eugenists, who declare the race is deteriorating through the conservation of the unfit. These, however, fail to take into account that man survives not because of physical endurance, resistance to infections, power of digestion, and survival under unfavorable conditions in general, but because of the intelligence which obviates these impediments to life and well-being. If a strong body or a phlegmatic character were the criteria of excellence, the hippopotamus would be the ideal of those who wish to survive. It is not then by a premature throwing into the melting pot that the physical betterment of human beings is to be sought, but by an intelligent and prolonged nurture.

No one advocates feeding strong meat to babes' bodies. It is no more reasonable to advocate the feeding of their minds with pabulum overstrong. Nurture in the family is far from complete if confined to material needs. Indeed psychic wounds may be more detrimental than physical defects in the after-conduct of life; so it is the duty of the family to save the child from psychic traumata.

Not only that, however, but just as by exercise of the proper muscles, and by proper food, a strong body develops, so by proper food for the emotions and exercise of the will a strong character is to be developed. A *laissez faire* attitude has not more justification in this than is given in physical hygiene to those discredited prophets who claim that our great-grandfathers were healthier than we because they gourmandised, drank to excess and disdained ventilation.

METHUSELAH

Methuselah ate what he found on his plate
And never, as people do now,
Did he note the amount of the caloric count—
He ate it because it was chow.

He wasn't disturbed as at dinner he sat
Destroying a roast or a pie,
To think it was lacking in grandular fat
Or a couple of vitamines shy.

He cheerfully chewed every species of food,
Untroubled by worries or fears
Lest his health might be hurt by some fancy dessert,
And he lived over nine hundred years!

As a matter of fact, however, it is a falsification of history to claim for our day the origination of mental hygiene. Even so long ago as Sparta, a most rigorous character discipline was imposed upon the young, and the ancient Persians took the greatest care in training their nobility during childhood. Our own activity in this respect is only a revival of what had long been obscured by a preoccupation with an after-life, and after the settlement of the turbulence of the Renaissance and the Reformation by the overdevelopment of industry and preoccupation by material needs, until the present-day return to sanity, inspired by the presence of thousands of wrecks resulting from a lack of good mental hygiene in childhood.

SOME PSYCHOTHERAPEUTIC SUGGESTIONS FOR THE RELIEF OF INDIGESTION

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General Principles of Psychotherapy as Applied to Various Forms of Indigestion.

Let me affirm as a proven fact that there are but few gastrointestinal diseases, no matter how material or far advanced, but what psychotherapy possesses for them a beneficent function. Even where a fatal termination is assured, and nothing can be done for the disease, something may be done for the patient, either by diverting the mind, or keeping alive the spark of hope, without which all would be blank despair. This is the most that can be expected in such melancholy conditions, but because a cure is not in view, the physician should not cease his efforts to infuse courage and cheer into the mind of the invalid. There are several reasons for this. In the first place there is a possibility that the fatal prognosis is a mistaken one. Many instances are on record in which, after an unfavorable prognosis was given, the patient recovered, outliving the physician who made the prognosis; again, there may be a mistake in the diagnosis, or the patient may possess a recuperative power not realized by the medical attendant. There are many objections to a gloomy prognosis, even under the most favorable outlook, and, if the physician will use to the uttermost any little grains of encouragement, while he says as little as possible concerning the less favorable aspects of the case, his influence on the course of the disease will necessarily be

uplifting; and he need not utter a single deceptive word.

THE PERSONAL EQUATION

Some physicians possess a personality which in itself inspires confidence, though anyone has within his power the faculty of cheerfulness and optimism. Undue levity in a sick room is, of course, to be deprecated, and to laugh at a patient's recital of woes, even though they be ridiculous, is nearly always harmful. Ridicule has no legitimate place in rational psychotherapy. A warm-hearted grasp of the hand on greeting a patient; a cheerful and smiling but earnest countenance, betokening a real desire to be of assistance; a sympathetic interest in the recital of infirmities—all these attributes on the part of the physician will gain the patient's confidence, and will ensure a receptive attitude for every therapeutic effort that may be later brought to bear. Everyone has heard some person remark that a certain doctor's medicine helped him more than some other doctor's, because he had more confidence in the former. This is a simple exemplification of both the influence of the personal equation and psychotherapy itself.

One of the first essentials in entering upon the treatment of a gastrointestinal disease, especially if it be chronic, is a thorough and systematic examination—more thorough, if possible, than any the patient has previously undergone. This has a double advantage—it bestows upon the physician a double knowledge of past and present conditions, and it convinces the patient that a deep interest is being taken.

Another point worth mentioning is the desirability of inaugurating some form of treatment, no matter how insignificant, as early as possible after taking charge of the case. While a leisurely amount of deliberation is necessary and praiseworthy, the viewpoint of the patient is from a different angle, and if the physician dallies too long he will lose some of his influence. A placebo can do no harm, and it will keep the patient in a more satisfied frame of mind, until the diagnosis is fully made. When a patient goes to a physician, he *expects* treatment, and if something apparently tangible is not done very soon, even the most intelligent patient will feel a shade of disappointment or dissatisfaction; and, if less intelligent, may indulge in open rebellion.

There are conditions of this sort that confront every physician, and he can, by the exercise of tact and personality, overcome them with perfect dignity and no stultification of his professional standing. First impressions are often lasting, and that the first impressions in the mind of a patient toward the physician may be those of confidence, is important in the extreme.

PSYCHOTHERAPY IN REGARD TO DIET

A few patients complaining of digestive disturbances, especially chronic forms, are suffering from excessive eating; rather more from injudicious use of stimulants; while the majority, in my experience, suffer from underfeeding. Practically all of these dyspeptics are on a *diet*, either self-imposed or instituted by a physician months or years previously. The diet is often totally inadequate to furnish the necessary calories required by ordinary demands of the body, consequently the body is ill-nourished, the nervous poise is rendered unstable by physical weakness, and the patient is less able to fight the inroads of disease. In many instances the hunger pains, the weakness, the emotional outbursts, and the countless vague discomforts which accompany slow starvation are mistakenly attributed to *indigestion*, and the diet is still further restricted. These ill-nourished sufferers have generally developed a sitophobia, or fear of food, and it will require every effort of the physician to overcome this fear. If after careful examination, there is found present a working quantity of digestive juices, and the motility is not radically impaired by organic lesions, the dietary should be generously increased, while strenuous endeavors should be instituted to change the mental attitude of fear into one of courage and confidence. Here is the opportunity for psychotherapy.

I often tell these timorous patients that there is *positively* enough gastric juice present for their needs; that if they will eat the food as I urge, I will help them with its digestion, and that they need fear absolutely no evil consequences.

In some cases the digestive organs, which have had nothing to do for so long, will rebel, and the patient will suffer from colicky pains and some soreness. This is explained by the comparison of heavy muscular labor performed by one who has long led a sedentary life and the consequent soreness, which will pass away if the exercise is continued. Thus, after the stomach and intestines have adjusted themselves to the new and more liberal regimen, with increased bodily

strength, there will be noted increased nervous stability, a more cheerful view of life, and a general feeling of comfort and wellbeing.

As an illustration of nearly every point here discussed, I can cite the case of a lady of fifty-eight years, who came under my care nearly a year ago. She was suffering from an organic but not malignant stricture of the esophagus, which had so reduced the lumen of that canal that she could only take liquid nourishment and in teaspoonful quantities at the time.

She was thin, nervous, and emotional, constipated, suffering from insomnia, and complaining of constant "indigestion." She was habitually taking medicine for the three complaints—constipation, indigestion and insomnia. Her esophageal obstruction had been incorrectly diagnosed as "nervous affection," though never explored with a sound.

The stricture was dilated with comparative ease, until a 20 English sound could be passed with facility. She was then told to increase and diversify her daily bill-of-fare and a simple alkaline carminative was given her mainly as a placebo. She was quite fearful that her stomach would not "bear" solid food, but having won her confidence, and after earnest assurances that she was able to digest what I recommended, she began to eat.

After about a dozen good meals the pains of the supposed indigestion began to disappear, and in two weeks they were gone. She found, to her delight, that she could sleep without her accustomed "sleeping draught," her fits of crying ceased, her disposition became bright and happy, and with increased weight and vigor came satisfaction with her daily life. It is still necessary to keep the stricture dilated at intervals, but she has gained about thirty pounds, and at present seems in perfect bodily and mental health.

Another important adjunct to the application of successful psychotherapy in digestive diseases, is to look after the small and intercurrent ills as they arise. If the physician will take sympathetic cognizance of the minor complaints, and will make minor concessions in unimportant matters, he will find that he can better exert his authority in important matters. Chronic dyspeptics have more than the usual share of human frailties, and if the physician attempts to entirely revolutionize their habits and customs, he may so upset and discourage them that they will not make the proper effort to get well or to cooperate with him.

If they can have their way in nonessentials, they will much more readily yield to advice in essentials.

CHANGE

This one word sometimes solves the whole therapeutic problem. It is noticeable that one's digestion is always good on a holiday, and many people find they can with impunity eat articles of food while on a vacation or pleasure trip which would profoundly disturb them at other times. On such occasions the mind is generally carefree, the thoughts are on external objects, while the attention is diverted from the stomach and all that pertains to it.

It is not always practicable to send a patient on a protracted vacation, nor can we always arrange a radical change in his business habits. When it is possible, however, the greater the change, within the limits of comfort and propriety, the greater the probable benefit. To take the wearied bookkeeper from his desk, and put him "on the road" for a while; to place the road-worn traveling man in the quiet haven of an office, to send the *blase* city man out among the green trees and meadows of the country; or to take the housewife, who has grown sick and weary under the monotony of life in some isolated community, and let her enjoy the bustle and sights of a great city for a season—all these, and others that ingenuity or practicability may suggest, will in many instances vary the diseased current of digestive thought and banish the introspection, the self-analysis, the self-pity.

CHEERFUL COMPANIONSHIP AND ENVIRONMENT

When the man of wisdom said, "A cheerful heart doeth good like medicine," he uttered a truism that applies to the Twentieth Century civilization as well as ancient times. The lack of sociability and good cheer at the table predisposes to indigestion, while the business man who eats his breakfast with his face buried in a morning paper, with not a pleasant smile for anyone, who eats his lunch in sour solitude and with gastronomic contemplation, is much more liable to the pangs of indigestion than a cheerful one, who intersperses the progress of his meals with pleasant anecdotes or bright and entertaining conversation. If I were asked to advise between a hurried meal with good cheer, or a deliberate meal with anger or disgust as its accompaniment, I would assuredly choose the former for safety.

It is worth the thought and time of the physician to regulate for good, if possible, the en-

vironment of every chronic dyspeptic, otherwise many a well-chosen prescription will come to naught in the presence of petty worries and repinings that seem to act with malign force on the digestive organs.

A confrere recently reported to me the case of a young lady who had long been troubled with nervous indigestion, and who was quickly relieved after changing her boarding place which was rather somber, and which numbered among its patrons some crusty and disagreeable individuals who made her excessively nervous. This physician not only insisted that she make the change but saw to it that she was established in pleasant and congenial surroundings, and the good results justified his expectations.

GAS GANGRENE COMPLICATING COMPOUND FRACTURES

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The disease of gas gangrene was a rarity both in occurrence and in the literature until the opening of the World War. It is true that the term "gaseous gangrene" was coined by Molier and Ponget in 1882, that the bacillus of malignant edema had been isolated in 1881, that Welch[1] had described the bacillus perfringens in 1892 in the Bulletin of the Johns-Hopkins Hospital, that this was followed by an incomplete paper on gas bacillus infection in man by Welch and Flexner[2] in 1896; but from then until 1912 when Guthrie[3] reported eight cases of gas gangrene before the New York and New England Association of Railway Surgeons, the subject remained dormant. In his paper, Guthrie advocated procedures almost identical with those we use today, using potassium permanganate solution in place of the present day Dakin solution. Discussion of his paper showed that the cases were very rare and the members of that association had very little information about the disease. The war opened two years later and many lives were lost during the first year because of this lack of knowledge concerning the proper treatment of this terribly virulent disease. In 1915 the outlook became brighter due to the purely impirical measures adopted, but it was 1916 before any real constructive work was done except for the isolation of the bacillus edematiens by Weinberg and Seguin[4] in 1915. The year 1917 brought forth much experimental work on the pathology of the disease and the prophylactic and curative values of sera. Wallace, Taylor, Weinberg, Seguin, Leclainche, Vallee, De Lavergne, Duval and Vaucher were prominent in this work in Europe. In this country, Bull and Pritchett's[5] work at the Rockefeller Institute won national recognition. Then, as Sir Cuthbert Wallace[6] remarks, "the war came to an end at the very moment when the organization for the investigation of this disease seemed at last to promise a settlement of many of the problems."

However, we as Railway Surgeons are confronted by those problems constantly. A large percentage of our cases resemble war casualties. Many of them are compound fractures with the muscles thoroughly macerated, in all points like a true shrapnel wound. With us the danger of gas gangrene is ever present. We must be prepared to diagnose the incipient cases and treat the advanced ones. To do this we must be acquainted with the present status of the prophylactic and curative treatment of the disease.

The general term, "gas gangrene," includes the lesions produced by a group of organisms, anerobes and aerobes, of which the principal ones are the bacillus perfringens or welchii, the bacillus sporogenes, the vibrion septique, and the bacillus edematiens. Usually the infection is a multiple one. The organisms belong to the intestinal flora and are ever present on clothes. Simonds[7] found the spores of the bacillus welchii group in all uniforms of Belgian soldiers and in all samples of new cloth from which the uniforms were made. As Gemmill[8] pointed out in May of this year, there is considerable confusion in regard to the action and clinical symptoms produced by the various organisms. There would appear to be two main varieties of the disease, first the classical emphsematous type and its derivatives; second, the toxic or edematous type and its derivatives. In the first group, the clinical symptoms make their appearance early, the disease is confined chiefly to the muscles, the disease may often be cured by removal of groups of muscles, and by guillotine amputations, and the mortality is about 16 per cent. In malignant edema, on the other hand, the symptoms begin later and the infection is more superficial, affecting only the subcutaneous tissues, the muscles escaping. The mortality is 100 per cent. Besides these two main types, there may be the mixed type and the putrefactive type.

According to Keith Inglis,[9] gas gangrene oc-

curring in civil life may be divided into two classes, depending upon the mode of infection. The first class includes those lesions in which like the gas gangrene of military practice, the infection is due to contamination of the wound by soil or material containing pathogenic anerobes which originally came from animal feces. The second class includes those lesions in which infection is not indirect by contaminating soil but direct by the patient's own intestinal organisms. Inglis reported in June, 1923, three cases of uterine sepsis ending fatally in which at post-mortem gas bubbles were found in the liver and spleen and he thought the patient was probably infected by pathogenic anerobes from the patient's own alimentary canal. Gemmill reported another such case in May of this year. As all four of these cases might have occurred after attempted criminal abortion, the infection might have apparently been introduced into the generative tract from the outside and Inglis' hypothesis would seem unnecessary. However, the case of abscess of the liver due to bacillus welchii infection reported by Snyder[10] in May of this year would seem to support this hypothesis of gas infection from the intestinal tract. In gas gangrene complicating compound fractures we have only to deal with the first class and our problem naturally resolves itself into diagnosis and treatment.

The greatest help in the early detection of gas has been the X-ray. H. N. Berry[11] in 1916 noted that in all cases of diffuse gas infiltration shown by the X-rays, crepitation of the tissues could be felt. Where only a few discrete gas bubbles were shown, nothing abnormal was palpable. Black[12] confirmed this in 1917. Ritzman[13] reported two cases diagnosed by the X-ray in 1923, and he advised that when the history and nature of the wound are favorable to the development of gas infection X-ray examination should be made every six to eight hours during the first few days, as this would reveal it before any of the typical symptoms are present. In Germany Biermann[14] in 1916 wrote of striking the region with the thinnest pincers available held like a tuning-fork. When there is gas, even in the depths of the muscle, there is a dull note like a "cracked pot sound." The exact area could be thus outlined. Maybury[15] of the British Army brought out in 1918 that the stethoscope is a great aid in hearing the crepitations. The classical symptoms of a developed case are swelling of the tissue, rapid pulse, tympany, crepitus, discoloration of the skin, odor, ability to milk gas bubbles out of the wound, thin discharge, and the maintained intelligence of the patient.

The treatment of gas gangrene, whether from the prophylactic or curative side, is either surgery alone or surgery plus the use of sera. Emery[16] in 1916 showed that bacillus perfringens is a frequent contaminating organisms of wounds but in most cases it fails to produce gas gangrene and seems non-pathogenic, probably because it is rapidly destroyed by normal blood and is strongly chemotactic toward leucocytes which promptly destroy it. The special conditions leading to its rapid development are those resulting in tissue destruction and interference with the local circulation. Therein lies the basis of all surgery directed at preventing the occurrence of gas gangrene. The process of removing crushed and macerated tissue, pieces of clothing and other extraneous dirt that might have been carried into the wound, removal of loose pieces of bone, is called a debridement. It is not only essential that all crushed and macerated tissue, particularly the muscle, be trimmed away, but that the muscle remaining after the debridement have ample circulation. The circulation within a muscle is largely terminal and while the capillaries anastomose, the larger trunks do not. It is therefore imperative that the larger blood vessels to the muscles be not damaged. If so, better remove the muscle. Following the debridement, there are two alternatives and the choice between them must be left to the individual surgeon. General rules as to this often leads one astray. It has been said that during the first ten or twelve hours after the injury, primary closure without drainage is indicated. Virulent gas gangrene often gets a good start in the first six hours and primary closure would certainly be out of place long before the twelve hours had elapsed. Much can be concluded from the appearance of the wound. Personally, in the presence of a deep dirty wound I have an uneasiness about doing a primary closure later than three hours after the injury. We do not have to adopt the heroic measures in civil practice that were often required in military surgery and the patient should be given the benefit of the doubt. In the doubtful cases, assume the wounds are already infected and after the debridement, insert Carrel tubes in sufficient number to supply the entire wound and instill the Dakin solution every hour during the day and every two hours during the night. At the Rockefeller Institute, where we had ample time to thoroughly compare the two methods, we felt that

the hourly or two hourly instillation of the Dakin solution was more efficacious than the continuous drop method because it added the benefits of a mechanical irrigation to the solvent and sterilizing qualities of the Dakin solution. The solvent power of Dakin solution upon necrotic tissue is wonderful, but let me insist that real Dakin solution be used. The time for secondary closure can be judged by the general condition of the patient, the appearance of the wound, and by the bacterial count.

The surgical treatment of established gas gangrene is immediate operation under nitrous oxide-oxygen anesthesia if possible, with free incisions and excisions, removing all discolored non-contractible muscle and leaving only muscle that is of normal color, is actively contractile, and bleeds easily. Avoid the use of tourniquets whenever possible. Stop all bleeding and separate the flaps well. Guillotine amputations may be necessary. Here again the Carrel-Dakin treatment should be used with a secondary closure.

But what has happened to the serum treatment that promised so much at the close of the war? It is true that the serum of Bull and Pritchett proved of little value in France. However, encouraging reports come to us from France of the results obtained with other sera. The most successful of these were the anti-perfringens, anti-vibrion septique, and anti-edematiens sera of Weinberg and Seguin,[17] and the polyvalent serum of Laclainche and Vallee,[18] used according to the method of Sacquepee and De Lavergne.[19] With the first, the prophylactic treatment was much more pronounced than its curative value. Excellent results with the polyvalent serum in the treatment of gas gangrene have been reported by Sacquepee and De Lavergne. Duval and Vaucher[20] reported that by the use of the mixed sera of Weinberg they were able to reduce the mortality from a normal average of 16 per cent to 315 per cent. In spite of these encouraging reports, Battle Malone[21] in the *Railway Surgical Journal* of 1919 concluded that while the opinion is held that a serum treatment is of positive value it is hardly probable that we will rely upon it in civil practice. And the majority of our profession seem to have taken just that attitude. As Goodman[22] remarked in the June number of the *Annals of Surgery*, "Death from tetanus would seem unpardonable on account of neglect of a prophylactic dose of serum administered in a case of street injury. Nevertheless it appears that one of the most potent therapeutic measures discovered as a result of the recent war is either forgotten or we have not had an epidemic of this gas infection brought home to us to the realization that prophylactic measures might be applied to prevent the occurrence of such disaster." Wallace, in Keen's Surgery, also speaks of the favorable effect the sera made on the mind of the French surgeons and is of the opinion that every effort should be made to continue and enlarge the treatment.

In searching the literature for information regarding the serum treatment, very little can be found in American literature on the subject, but much has been written in the French. However interesting that may be from a scientific standpoint, it does not practically aid us in this country. Following the war Bull and Pritchett failed to report the results obtained in France with their serum. Gemmill mentioned Bull's serum in his article of May of this year, but said nothing concerning its use. Goodman reported a case treated with the tetanus perfringens antitoxin that recovered without an amputation and his report is the only one in current American literature. He secured his antitoxin from the Lederle Laboratories. Following this lead, letters were written to the Lederle Laboratories, to Dr. Bull, and to Dr. George Stewart who had charge of the surgical division at the Rockefeller Institute during the war and used the serum under Dr. Bull's direction on several cases of gas gangrene. The Laboratories replied as follows: "The tetanus perfringens antitoxin which we are dispensing was prepared according to the methods and suggestions of Dr. Bull. We have never pursued the marketing of this product with as much interest as might have been expected because we felt that its use in normal times was very limited. We believe that the product is based on right scientific information and that its use as a prophylactic in certain types of wound would be justified and also that its use as a curative agent has given good results. It is quite possible that while this product would not have a wide use, that there is still sufficient reason to make it available and we will be glad to cooperate with you to the extent of having a supply of this antitoxin stocked with E. H. Cone in Atlanta, and our own office at New Orleans, and believe these depots could reasonably accommodate your needs. If, as seems quite possible, there has been a need we have overlooked in this respect, we will be glad to take this matter up in further study with the possible preparation of an antitoxin against one or more

of the other important anerobes that may probably be met with in wound infections. The tetanus perfringens antitoxin as we had prepared it contained approximately 1,500 units of tetanus antitoxin and 10 units of perfringens antitoxin in 10 c.c. The prophylactic dose recommended was 10 c.c. subcutaneously and curative dose was 200 c.c. intravenously followed in six to eight hours as required, it being the opinion that there is little good in using a total dosage of above 500 c.c."

In a subsequent inquiry regarding the price at which this antitoxin could be furnished, the Laboratories quoted a price of $15 per 100 c.c. of serum. This would mean a cost of $1.50 per 10 c.c. or prophylactic dose, which is less than what the layman pays at the average drug store for 1,500 units of tetanus antitoxin alone.

Dr. Bull replied to our letter in his usual straightforward manner. He says, "The practical side of gas gangrene antitoxin was disappointing. It would probably do some good as a preventive if given when injury occurs, but cases are so infrequent in civil life that it is not practical to have it on hand. I don't believe any serum has been made since the war."

Dr. Stewart writes: "In gas gangrene the best thing, of course, is prevention. In fresh accident cases we do not have an infection of any kind if proper surgical clean-up is done in the beginning. As far as serum treatment is concerned, while we got some good results at the Institute, it did not turn out to be of any great value in these cases and has almost been discarded. Bull has not given out any more recent reports of his work. I still feel that with compound fractures infection is due to a poor clean-up immediately after the accident."

Everyone will agree with Dr. Stewart regarding the proper surgical clean-up of the wound. As to the infrequency of the gaseous infection, there is a divergence of opinion. During the past twelve months, there have been to my knowledge three cases in Tampa. All three patients died. The first case was an elderly white man shot in the right thigh on December 2, 1923. He was taken to the city hospital immediately after the injury occurred and received prompt treatment from a good surgeon who performed a debridement and closed the wound partially and inserted an iodoform drain. The pathological findings as recorded on the operative chart were as follows: Gunshot wound of the middle third of the right thigh. Entrance wound one inch in diameter extending down through the thigh muscles, mushrooming the femur at the middle third. Exit wound on internal surface of thigh. The patient was admitted at 4 a. m. and the temperature was 97.0. At 8 p. m. the temperature was 102.0 and continued high until just before death, at 4 p. m. on December 4th. No radiograms were made in this case. No crepitations could be felt on the third, and the surgeon thought the patient was in fairly good condition. A note was made on the day of death and reads as follows: Wound dressed. Edema of the upper part of thigh. Skin dark bluish. Crepitation under the skin extending up to Poupart's ligament and into the peritoneal cavity.

The second case was a negro gambler shot at the junction of the lower and middle thirds of the left leg at 3 p. m. on Sunday, April 6, 1924. A compound fracture was produced with much splintering of both bones of the leg. The patient refused operation until 11 p. m. Monday when his sister arrived from a distant town. The wound had been swabbed out with iodine immediately after the accident. At midnight Monday the leg was removed about four inches below the knee by a very good general practitioner. The doctor thought the tissues were normal at that point. The following day the stump was badly swollen and gas bubbles could be felt. The flaps were retracted and the wound irrigated and drained. On Wednesday the stump began to turn black and the gangrene continued to ascend until it reached half-way to the hip on Friday. The patient died at 1 p. m. Friday after he had been placed on the operating table for disarticulation at the hip joint.

The third case is the most interesting of the three and illustrates how virulent the gas infection may be. A Cuban boy fell from a tree on Monday afternoon at 5 o'clock, receiving a compound fracture of the right wrist and a simple fracture of the right elbow. The family physician was called who gave the boy immediate attention. The upper fragment of the radius was found projecting through the wound covered with dirt. The bone and the wound were cleansed with 1-1000 bichloride solution and the wound was swabbed out with 2 per cent mercurochrome, and the bone replaced in the forearm and a sterile dressing applied over the wound which was about two centimeters in diameter. A temporary splint was applied to the arm and forearm. The following morning at 11 o'clock the boy was taken downtown by the doctor for a radiogram, but the

dressings were not removed and the arm and forearm were not examined. That evening the boy began to complain of pain in the arm, but the doctor was not summoned until the next afternoon when he found the forearm to be black. The boy arrived at the hospital at 7 p. m. Wednesday. At that time the arm was black to within three inches of the shoulder. There was crepitation several inches to the left of the midline both front and back. The temperature was 99.6, pulse 120, respirations 40. The boy was mentally alert. No hope was entertained for the boy's life, but it was thought best to at least make multiple stab wounds to allow the escape of the gas. The boy died at 5 a. m. Thursday, his mind remained clear until three hours before death.

In conclusion we wish to stress: First, the great importance of a thorough debridement and cleansing of the wound; second, the value of the X-ray in the diagnosis of early gas infection; third, the possibilities of sera as prophylactic and curative agents, and, fourth, that gas infection is not the rarity formerly supposed.

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THERAPEUTIC INTRA-MUSCULAR MILK INJECTIONS.*

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From the dawn of history, man has believed that there lies in milk some substance of therapeutic value, and that milk can be used in inflammations. Since ancient days milk has been dropped into the eye sac in ocular affections by the laity. The practice has been regarded as a superstition by medical men, and undoubtedly with justice; nevertheless there remained a grain of truth in the practice, and the reason of its disrepute was ignorance of the proper method of use.

We all know the tonic effects of a milk diet in illness, and often we have observed the fact that nursing infants enjoy a higher immunity to family infections than their older brothers and sisters, despite the universal practice of all infants in putting everything they can get hold of into their mouths.

It has been called to our attention that people living on a diet of milk products are hardy folks and tend to live to an advanced age. A spark may be fanned into a flame, and just at the present era of medicine the flame is beginning to appear from this particular spark. And we find in ophthalmic literature numerous references to intramuscular milk injections in the treatment of ocular inflammations.

We all know how vulnerable a part the eye is for infection. From the first hours after birth until the deathbed the tissues of the eye offer a most favorable lodgment for pathogenic bacteria, and the most apparently inconsequential, innocent, local redness of the conjunctiva or abrasion of the cornea may even in a few hours lead to a crippled eye, with adherent iritis, or within a few days to panophthalmitis and total loss of an eye.

In eye infection the surgeon's hands are tied and restrained from measures possible in other parts. Energetic and drastic measures are often impossible. Bland and weak antiseptics must be used here.

Operations here are more hazardous, and an opened vitreous chamber is as prone to destruction as an opened egg, especially when the operation is done in face of even the slightest conjunctivitis.

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*Read before the Dade County Medical Society, May 2, 1924.

These facts have led to alertness and search for ways and means to lessen hazards and to cure infections more certainly than before.

Blandel and Robin in 1923, so far as I know, were the first to use injections of milk in ocular infections; they used parental milk, and from France and Germany the method spread to Spain and England and Italy; in Austria a new application was made of the treatment; there goat's milk and cow's milk were tried with wonderful success. I believe any mammalian milk may be used; but in this country cow's milk is so universally procurable, that it is about the only milk we use.

According to reports, milk injections are particularly efficacious in severe conjunctivitis of all bacterial types, gonococci, pneumococcic, diptheria bacilli, streptococci and staphylococci.

Milk injections are marvelously effective in severe iritis, choroiditis and panophthalmitis, but in the last-named disease the treatment must be begun early and continued daily for many days and may be the only hope of saving the eye.

METHODS OF USE AND PREPARATION

Cow's milk, goat's milk or human milk is obtained and boiled 10 or 15 minutes; ordinary bottled milk is just as good as any other, and it is thought that the bacterial content does not matter.

An ordinary Luer 10 c.c. glass syringe is what I use; it is sterilized along with the needle, and the injection is made in the gluteal muscles after proper cleansing by washing in soap and water and painting with iodine tincture.

Various methods are in vogue; some boil 10 to 15 minutes, let cool, and boil 5 or 10 minutes more. Personally I have it boiled 10 minutes and use it at once. I have taught the druggist at the Arcade Pharmacy how to boil it and put it up in a sterile bottle, with a sterile cord.

When I want it I simply telephone for it and they prepare and deliver it in half an hour. I order it fresh for every case and never use stock sample; some physicians do that, having it boiled in the morning and use from the sample all day; some use milk from which the cream is decanted, but I prefer whole milk well shaken up.

The dosage is from 2 to 15 c.c. I usually start off with 5 to 8, most always 8; in severe cases I repeat every two or three days and never use less than 8 c.c.

Patients often, but not always, have a chill lasting from five minutes to two hours, this being the longest, and once in a while they suffer nausea and emesis, but not very often. It seems to me that in those cases having severe reaction the results are the best.

At first I dreaded local infection at the site of the injection, but have never had one. I have never experienced anaphylaxis in a case. In one of my early cases the druggist misunderstood, and boiled the milk only two minutes; in that case the patient found it uncomfortable to sit down for a few days, but outside of that I have had but very little soreness after injections; the next day it is hard to find where you made the injection. If there ever has been any infection, I have not known of it.

It is thought that the reason we do not get frequent anaphylaxis is because the human race is desensitized from long-continued use of milk products.

CASE REPORTS

Mr. E. S., age 50; nationality, Swiss; February 19, 1924; ulcer of the right cornea, outer quadrant. Had intense photophobia and lacrymation, conjunctivitis and iritis with adhesions. Under mydriatic the iris dilated into a small triangular window; he had sleepless nights for three nights in spite of hypnotic and was doing badly; on third day gave 8 c.c. bovine milk deep into gluteal muscles, slept well that night, pain and lacrymation stopped, photophobia diminished. On the fifth day repeated same dose, adhesions gave way, eye cleared, conjunctivitis and all symptoms abated, and ulcer healed rapidly, patient was well in a week after first injection. This patient had a chill lasting two hours and vomiting after first injection only.

Mr. E. J., aged 54; had a serpigenous ulcer of cornea which on March 10th was 5 c.m. long. Cauterized it, severe pain subsided but ulcer continued to grow at the ends; on March 14th had 8 c.c of milk. Ulcer stopped and started rapidly to heal, so that on March 17th could only be seen by staining and magnifying glass, no opacity was left after March 19th; patient was discharged a very grateful patient.

Mrs. M. W. (widow), aged 75; September 20th came with a catarrhal conjunctivitis. Case did poorly, came often and I wondered at her patience; on December 16th she accidentally got tooth paste in her left eye, had severe keratitis and a corneal ulcer developed; eye was promptly treated with atropine and just as promptly the

patient developed an acute glaucoma and intra-ocular tension went up; patient was nauseated constantly and in a bad condition. Iritis occurred also, in spite of which I had to use miotics. Had 5.8 10 10 c.c. of milk every three days. All symptoms mentioned rapidly disappeared and her vision is 20/20 each eye. That was a remarkable case and the cure was almost miraculous. This patient had no reaction to the injections.

Mr. E. P. K., aged 60; had the fourth attack of iritis in right eye. Pupil dilated oblong and adhesions would not give way. Had regular treatment with mydratics, etc., and felt well and stopped treatment. March 4th had relapse with intense pain in forehead; patient smelt bad and had a septic look, and was very much discouraged and very peevish. Given a milk injection 10 c.c. In two days looked like a different man, had no pain for the first time; pupil dilated evenly and he said his eye "felt better than it ever did," had some bad teeth taken out and two more injections as a prophylactic, and was a most enthusiastic patient, with renewed faith in the medical profession.

Mrs. Martha N., aged 54; hydrochloric acid burns of both eyes, left eye ulcerated in numerous places, cornea dull, gray, opaque. Adhesions had to be broken up every day to keep upper and lower lids from growing to eyeball. Just as one set of ulcers healed, another set appeared. Developed abrasions on the cornea and it looked as though patient would lose left eye in spite of all that could be done. Resorted to milk injections every three days; almost marvelously the ulcers on both conjunctives and cornea and eyelids healed, the keratitis disappeared, the opaque cornea became gradually transparent and sight returned to what had been a blind eye. At present she has better vision in that eye than the other. The conjunctiva has numerous scars, and is injected and hyperæmic, but cornea is as clear as a baby's. This case is truly remarkable, and a most estimable woman has had her vision saved and I ascribe it largely to the lacteal injections.

The last case I wish to report is one in which milk was used wholly as a safeguard against what might have been regarded as an inevitable infection.

Mrs. E. F., aged 65; acute congestive glaucoma O. S. Intense conjunctivitis, terrible pains in jaws, face and head; patient said she wished she could die, and I think she meant it. She was a refractory patient and resisted all kinds of treatments and operations, vomiting was constant day and night. She at last submitted to treatment, but miotics had little effect and pupil remained dilated, in spite of all treatment, although the symptoms except the vomiting abated slightly. After suffering a week, after I saw her, she, or her family I should say, submitted to an iridectomy. Dr. Turner gave the anæsthetic and a sclerotomy-iridectomy was done in spite of the conjunctivitis; immediately all symptoms abated the conjunctivitis; the cloudy cornea and vomiting remained, milk injection was used three times, and the cornea cleared so that a cataractous lens could be seen. After these injections her eye rapidly cleared, but the injection subsided very slowly. Her tension went up to 65 with the Souter tenometer before the operation. Had we not had recourse to the milk injection, she most likely would have had post-operative infection in view of the conjunctivitis.

THE THEORIES OF MILK INJECTION

Lieberman of Germany thinks milk injections act in this way: Lysine is produced in the blood and carried by the vessels in a state of hyperæmia to the arena of the disease where the specific curative action takes place. Fradkine refers to Ehrlich's theory of immunity from the alexine in milk which set free in the blood after absorption into the circulation after injection, causes a passive immunity to invading bacteria. Others believe the milk excites an intense phogocytosis.

Whatever theory is right, the fact remains that in milk injections we have a remarkably efficacious method of combating infection. Milk is a product obtained anywhere at almost no cost and is easily prepared. I believe that it can be applied to other infections than ocular ones.

The *Therapeutic Gazette*, May, mentions successful use of milk injections in 100 cases by Tananbaum; his cases were ulcers of the leg, puritus, furunculosis and acne.

The *Medical World* of April has an article mentioning success in milk injections in purpura hemorrhagica; arthritis and epididymitis respond well to milk injections according to an article in the *Practitioner* of April, 1923.

As a prophylactic milk injections are used in all major ophthalmic operations in Vienna today and without doubt it is going to be a great boon to ophthalmic surgery in this country.

25 N. E. First Ave.

LETHARGIC ENCEPHALITIS

R. A. Gowdy, M. D., B. Sc.,
Miami, Florida.

Seven years ago medical men were very much concerned about a strange disease which was rapidly spreading over the world. To most of us it was entirely new and gave us lots of trouble in making a correct diagnosis. I think I am safe in stating that most cases were not properly diagnosed during the first few months the disease was in progress. Perhaps most cases were considered tuberculous meningitis, or influenza during the acute stage.

The disease seemed to follow in the wake of the recent pandemic of influenza and had its origin at about the same place. The first cases were reported in Austria during 1917. By 1918 cases were reported in France and England, while in the United States the first cases occurred during the winter of 1918 and 1919. About the only reference found in medical books seven years ago to a similar condition was regarding noma, a disease found in northern Italy following the influenza of 1889, which was probably identical to the disease we are now dealing with. From the brief amount of space given to noma in medical works there must have been comparatively few cases. During the past seven years there have been thousands of cases all over the world, but more especially in the north temperate zone. It is most prevalent during the winter and spring months and no age is exempt, although young adult life seems most susceptible. We now think that following each pandemic of influenza there have been cases very similar to the ones we have now, but apparently never before have there been so many nor have they continued over such a long period. Just why it should follow great pandemics of influenza is unknown. It does not seem to be more common in those who have recently had influenza; however, there seems to be some connection or association between influenza and this other disease which we call lethargic encephalitis.

The etiology is still unknown. Many research men have reported having found the causative organism, but none have proven to be authentic. It seems to be a filterable virus which gains entrance by way of the nose-pharynx. It is infectious during the acute stage and also during the Parkinsonian or late stage. The incubation period seems to be short, but to my knowledge no certain length of time has been established. It is so seldom that two persons in the same household are afflicted that it is hard to work out the incubation period. Only under certain conditions do we seem to contract it, however in Northern Sweden in scattered districts people do not seem to have the immunity that people in crowded districts do.

The acute stage of the disease may last from three to eight weeks, but many cases are so mild that the acute stage is over in a few days and often overlooked until the late symptoms or sequelæ develop. Then the patient will admit having felt badly for a few days, and may state that he saw double or had muscular twitching for a few days, but did not feel sick enough to call a doctor. On two occasions mothers brought their sons to my office to find out why they slept day and night and appeared so lifeless. For several days they had slept constantly excepting when aroused and then would quickly slip back into their peaceful slumber. They had the usual blank expression. Both admitted having seen double for a few days, had slight fever and headache, but did not feel that they needed medical attention. Other cases begin with a mental excitation stage instead of lethargy. Many cases go unrecognized until the Parkinsonian syndrome develops or a change in disposition and personality is noticed. Children under 20 are more susceptible to change in mentality and disposition than adults.

Pathologic findings are chiefly confined to subthalmic region and mesencephalon, but may involve the meninges or upper cord. There is perivascular infiltration of round cells, vascular congestion, evidence of toxic degeneration of nerve cells, proliferation of mesoblastic cells and glial proliferation, much the same as we would find in any inflammatory condition in the brain.

The usual early objective symptoms are: moderate rise in temperature, mask-like expression, slight conjunctivitis, lethargy or irritable and excitable mental state, slow response to questions but clear-cut answers. If lethargic type, patient is easily awakened when spoken to but quickly returns to lethargic state when undisturbed, strabismus, nystagmus, facial paralysis, tremor of facial muscles while speaking, tremor of tongue on protrusion, congested eyegrounds without choked disk, pupils regular and react to light and accommodation, no rigidity of neck, no Kerning or Babinski, increased knee-jerk, negative Rhomberg, blood pressure normal, blood count shows slight leucocytosis, 8 to 12,000,

otherwise normal; spinal fluid under slightly increased pressure, otherwise normal. There may be a slight increase in sugar content and cell count in some cases. Not all of these findings would be found in one case, but part of them are usually found.

The late objective findings are: Parkinsonian syndrome, change in personality and disposition, dementia, torsion spasm, athetoid movements, tics or clonic contractions of a certain group of muscles, epilepsy, hemiplogia, hemianesthesia, and catetonia with absence of knee-jerk. Again we would not expect more than part of these findings in any one case.

The early subjective symptoms are: Headache, dizziness, marked weakness, double vision, drowsiness or nervousness depending on type, photophobia, inability to read, difficulty in eating due to facial paralysis, loss of movement or loss of sensation in one side.

Later symptoms are: Lack of ambition, disturbed mental state, muscle spasm, constant movement of hand, foot, or certain groups of muscles which becomes chronic, and complete helplessness in extreme cases.

Diagnosis is largely made by history, findings and exclusion. There are no cardinal symptoms or findings which will make a positive diagnosis excepting as we take positive and negative findings and put them together. Tuberculous meningitis and brain tumor are perhaps the most difficult to rule out, especially brain tumor involving the subthalamic region. Some cases are quite easily diagnosed and others are extremely difficult. Double vision or other cranial nerve paralysis, with lethargy or mental excitation and muscular twitching, coming on after a mild sickness, which may have been taken for grippe, would make us suspect epidemic encephalitis. One usually comes to a diagnosis by exclusion of other diseases which might produce the symptoms we find more than by any particular symptoms or findings.

The treatment is mostly symptomatic, although convalescent serum is apparently giving good results in many cases.

The prognosis is good as to life but bad as to complete and permanent recovery. Perhaps not more than 10 per cent die during the acute stage and from the number of late symptoms or sequelæ it is not likely that more than 10 per cent will remain permanently well. This would leave 80 per cent with some defect after once having had even a mild attack of this peculiar disease.

TRAUMATIC APPENDICITIS

L. S. Oppenheimer, M. D.,
Tampa, Florida.

Its medico-legal importance, and the fact that two such cases have been lost in the courts during the last two years by companies for which I am surgeon, has impelled me to write this short resume of the subject.

Dissenting opinions of prominent writers emphasize the importance of clarifying the case.

There is probably no question that appendicitis is an infectious disease caused by the entrance of infectious matter from the cæcum into the appendix through its lumen.

Abnormal appendices are by no means confined to persons who have suffered from symptoms of appendicitis. Rothman quotes the following authorities to verify this:

Aschoff reports 50 per cent of persons over 40 coming to autopsy as having normal appendices.

Pankow—in 150 cases where the appendix was removed as a routine measure, without previous symptoms, only 24.66 per cent of normal appendices were found.

Kroenig—in 28 cases where the appendix was removed as a merely routine measure, only 18 per cent were normal.

Rothman, in describing the appendix as "The Abdominal Tonsil," speaks of it as a lymphoid organ, bordering on a cavity rich in bacteria, hence peculiarly susceptible to infection.

The opinions expressed by some authors that they believed that trauma was an etiologic factor in some cases of appendicitis, appears to be based entirely on the observation of others.

For instance, Keen in 1908 quotes Von Neumann in 1892 as having figured that trauma produced it in 10 cases out of 150 in his clinic. Osler in 1899 believed in trauma as a cause.

Kelly in 1909 gathered 50 cases from the literature to show that trauma may produce appendicitis. But in his caption over the tabulated cases he emphasizes his own doubts by calling them "presumptively of traumatic origin." In fact, the previous histories was stated "not known"; and at operation 40 of the cases showed positive evidences of former disease, and the remaining 10 were "not noted." His final opinion is clearly shown in the following concise but comprehensive statement of both phases of the question:

"A severe muscular strain may produce a lesion in a diseased appendix or one containing

a fecal concretion"—but "no case has as yet appeared in which it has been shown that an injury *ab externo* has produced an appendicitis in a previously normal appendix."

Coughing, lifting, blows on the right abdomen, have been cited as being primary causes because symptoms became manifest at once without any previous history of appendiceal trouble.

Capelle affirms that the surgery of abdominal injuries shows only two types of trauma, bursting and crushing, and contends that trauma cannot produce an inflammation in a hitherto normal appendix.

Sprengel, Deaver and Da Costa state unequivocally "there has never been a case of traumatic appendicitis scientifically proved."

No case of direct injury to the appendix has been authenticated. Moorehead, in his masterful work on "Traumatic Surgery," clarifies and simplifies the question so satisfactorily that I will quote from him in conclusion. In substance he says:

"This contention is practically limited to medico-legal exigencies, and it is discussed here with that in view, and not because it is clinically even an admitted etiological factor.

"I do not know of any form of external violence capable of producing it in a healthy appendix.

"That abscess formation or a gangrenous process is aided or abetted by external violence, I do not believe.

"If external violence is to play any causative part whatever the following factors must be in evidence:

"(a) The trauma must be directly over the appendiceal region and there must be external evidences of injury.

"(b) The onset of symptoms must be prompt.

"(c) The attack must be the first that ever occurred in the patient.

"(d) There must be no preceding history of 'indigestion,' 'biliousness,' 'colic,' 'ptomaine poisoning,' etc., for any of these often actually mean appendicitis.

"(e) At operation evidence of appendicitis *de novo* must be verified."

Physicians or surgeons who get upon the witness stand, as did those in the cases referred to at the beginning of this paper, should be confronted with this array of authorities to show to the jury the uninformed or the unconscientious doctor.

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BRONCHOSCOPIC TREATMENT OF A LUNG ABSCESS IN ONE OF ADVANCED YEARS

WILLIAM JEROME KNAUER, M. D.,

Jacksonville, Florida.

The reason for presenting this case is that it illustrates with what impunity bronchoscopic treatment of lung abscess may be instituted when old age and other conditions are a factor.

REPORT OF CASE

J. R. W., a man, aged 71, was referred to me on April 14, 1924, with a diagnosis of lung abscess of the upper lobe of the right lung, complicated by a dilatation of the arch and descending aorta and diabetes. (X-ray corroborated the lung abscess and dilated aorta.) Following an attack of influenza in March, 1924, the patient began coughing up about two ounces of pus a day. This gradually increased until at the time he was referred to me he was coughing up about six ounces a day and running a septic temperature. This condition, as stated before, was complicated by diabetes and a dilated aorta, and an age of 71. The recent attack of influenza had weakened him considerably. The question that presented itself was whether the patient would stand a bronchoscopic irrigation or not. He was told of the probable risks and decided to have the treatment. I gave him four bronchoscopic irrigations at weekly intervals beginning April 14, 1924. After the third treatment he ceased coughing up any pus and at the fourth treatment

the bronchoscope revealed the abscessed portion of the lung in a state of repair, and it was decided to discontinue treatment. Two weeks later X-ray and lung mapping of the affected portion of the lung showed it to be in a state of repair. The patient has returned to my office at monthly intervals and to date, eight months since his last treatment, he has had no recurrence of symptoms and has gained in weight and strength.

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ASSOCIATION NEWS

At the annual meeting of the Hillsboro County Medical Society, held December 2, 1924, the following members were elected to the offices mentioned for the ensuing year: President, Dr. M. R. Winton; vice-president, Dr. E. W. Bitzer; secretary, Dr. Blackburn W. Lowry; censor, Dr. Sheldon Stringer. Delegates to State Association: Dr. J. C. Dickinson, Dr. Jno. S. Helms, Dr. C. R. Marney, and Dr. H. Mason Smith.

PUBLISHER'S NOTE

WORTH LOOKING INTO

The perfect antiseptic for irrigations and wet dressings seems to have been discovered at last. According to the manufacturers, it is equal or superior to chlorine compounds on the score of activity, and in suitable solutions neither irritates nor stains.

The basis of this antiseptic is bromine, and the product itself is called Dibromin, there being two atoms of bromine in each molecule. Dibromin is said to be freely soluble in water up to four per cent, and the solutions required in practice run from 1:10,000 to 1:2500, rarely more concentrated than the latter.

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Parke, Davis & Co. offer free literature on Dibromin to interested members of the medical profession.

REVIEW FROM CURRENT LITERATURE

CARCINOMA OF LARYNX.

Some Observation on the Radiation Treatment of Carcinoma of the Larynx, by Henry K. Pancoast, M. D., Philadelphia, Pa., Amer. Jour. of Roentgenology and Radium Therapy, Vol. XII, No. 3, Sept., 1924, p. 217.

Study of case reports and end results shows an appalling lack of cure and recurrence is the rule. Surgery offers the best outlook in cases that can be fully extirpated even to complete removal of the larynx. Radiation offers with tracheotomy palliative benefit and should be used.